CLAIMS

1. A method for monitoring corrosion of a working electrode, wherein an alternating perturbation signal of at least one frequency is applied to the working electrode, a signal representing the response of the working electrode to the applied perturbation signal is monitored, and the monitored signal is filtered to separate out a signal representing the response of the electrode to the or each applied frequency and an electrochemical noise output signal representative of corrosion at the working electrode.

2. A method according to claim 1, wherein a measure of impedance is derived from the applied perturbation signal and the response signal, and a further electrochemical noise signal is derived from the impedance and the said output signal.

3. A method according to claim 2, wherein the said output signal represents electrochemical current noise and the said further electrochemical noise signal represents electrochemical potential noise.

4. A method according to claim 2, wherein the said output signal represents electrochemical potential noise and the said further electrochemical noise signal represents electrochemical current noise.

5. A method according to claim 3, wherein an alternating potential control signal is generated, the potential between the working electrode and a reference electrode exposed to the same environment as the working electrode is monitored, an alternating perturbation current signal is applied through an auxiliary electrode which is exposed to the same environment as the working electrode such that the monitored potential is the same as the potential of the control signal, the applied current is monitored, the monitored current is filtered to separate out a signal representing the response of the electrode to the or each applied frequency and a

signal which represents the electrochemical current noise, a measure of the impedance of the working electrode is derived from the applied current signal and the response signal, and a signal representing electrochemical potential noise is derived from the filtered signal and the derived impedance measure.

6. A method according to claim 4, wherein an alternating current perturbation signal is generated, an alternating current is applied between the working electrode and an auxiliary electrode which is exposed to the same environment as the working electrode, the potential between the working electrode and a reference electrode which is exposed to the same environment as the working electrode is monitored, the monitored potential is filtered to separate out a signal representing the response of the electrode to the or each applied frequency and a signal which represents electrochemical current noise, a measure of the impedance of the working electrode is derived from the applied perturbation signal and the response signal, and a signal representing electrochemical current noise is derived from the filtered signal and the derived impedance measure.

7. A method according to any preceding claim, wherein the alternating perturbation signal has a DC offset.

8. A method according to any preceding claim, wherein the alternating perturbation signal comprises one or more sinewaves.

9. A method according to claim 8, wherein the pertubating signal contains sinewaves that have a period that has an integral multiple relationship to a frequency at which the electrochemical noise signal is sampled.

10. An apparatus for performing the method according to any one of the preceding claims.

11. An apparatus substantially as hereinbefore described with reference to Figure 2 or 3 of the accompanying drawings.